REMARKS

The status of the related applications listed at paragraph 1 of the specification has been updated. Applicant advises that claims in some related patents may cover similar subject matter. Reference to 08/680,463, deleted by earlier amendment, has been restored. No petition is needed because 08/680,463 was listed in the original application as filed; is also listed on the filing receipt; and because this application pre-dates the petition rule requirement, based on its July 7, 2000 filing date.

Claims 1, 3-5, 16-19, 22, 23, 26, 27 and 30-38 are pending in the application. Reconsideration and withdrawal of the rejections is requested in view of the foregoing amendments and the following remarks.

Claims 1, 18 and 23 have been amended to further define over the prior art.

Claim 2 has been cancelled and rewritten into independent form, as a combination of claims 1 and 2, but without the container door remover and the transfer station of claim 1.

Claim 6 has been cancelled and rewritten into independent form, as new independent claim 31, a combination of claims 1 and 6, and without the container door remover and the transfer station of claim 1.

Claim 10 has been cancelled and rewritten into independent form, as a combination of claims 1 and 10, and without the first and second elevations of claim 1.

Claim 16 has been cancelled and rewritten into independent form, as a combination of claims 1, 15 and 16, and without the container door remover of claim 1.

Claim 20 has been cancelled and rewritten into independent form, as a combination of claims 18, 19 and 20.

Claim 21 has been cancelled and rewritten into independent form as new claim 35, which is a combination of claims 18 and 21.

In allowed claim 22, at line 4, "device" has been changed to "robot." See page 34, line 7.

Claim 25 has been cancelled and rewritten into independent form as new claim 36, which is a combination of claims 1 and 25, without the transfer station and the first and second elevations of claim 1.

New claim 38, which depends from claim 18, is similar to original claim 4.

New claims 30-38 have been added in view of paragraph 6 of the October 24, 2003 office action, which indicates various dependent claims as allowable. Applicants submit that new claims 30-38 are allowable based on the indication of allowability in paragraph 6 of the office action. While new claims 30-38 do not all necessarily include all limitations of their original base claims (specifically: the door remover, transfer station, and first and second elevations), these claims remain allowable over the prior art.

New claim 34 includes all of the limitations of claims 18, 19 and 20. New claim 35 includes all of the limitations of claims 18 and 21.

Claim 1 has been amended to describe flat media container positions arranged in a side-by-side array, and with all of the flat media container positions at the first elevation. Claim 18 has been amended to describe an indexer having first and second rows of flat media container holding positions, and at least one container shifting system for moving containers between the positions. As neither Mages, USP

5,772,386 or Tateyama et al., USP 5,442,416 describe the combination of elements in amended claims 1 and 18, these amended claims are now in condition for allowance.

Claim 23 has been amended to clarify the various means plus function expressions and to further define over the prior art. Specifically, claim 23 describes transfer means for moving the wafers or flat media into a carrier, and then spinning the carrier holding the wafers, in process chamber means. One embodiment of the carrier is shown, e.g., at 990 in Figure 33 of the application. Claims 16, 17, 22, 32 and 33 also include a carrier. As no carrier is suggested in the prior art, these claims are allowable. The systems using the carrier are claimed in a CIP application 09/735,154, now U.S. Patent No. 6,536,131. A divisional application 10/163,837 (Examiner Brahan), claiming methods, is allowed.

In view of the foregoing, it is submitted that the application is in condition for allowance, and a Notice of Allowance is requested.

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Respectfully submitted,

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Specification Sheet Marked Up To Show Changes

Please change the specification at page 1, lines 4-14 (paragraph 1) as follows:

This Application is a continuation-in-part of U.S. Patent Application Serial No. 09/274,511, filed March 23, 1999 ~~and~~ now ~~pending~~ U.S. Patent No. 6,279,724, which is a continuation-in-part of U.S. Patent Application Serial No. 09/112,259, filed July 8, 1998, ~~and now pending~~, now U.S. Patent No. 6,273,110, which is a continuation-in-part of U.S. Patent Application Serial No. 08/994,737, filed December 19, 1997, ~~and now pending~~, now U.S. Patent No. 6,447,232, which is a continuation-in-part of U.S. Patent Application Serial No. 08/851,480, filed May 5, 1997 and now abandoned, which is a continuation of U.S. Patent Application Serial No. 08/680,463, filed July 15, 1996, now U.S. Patent No. 5,664,337. Priority to these applications is claimed under 35 USC § 120, and these applications are incorporated herein by reference. U.S. Patent Application Serial No. 09/611,507, filed July 7, 2000, now U.S. Patent No. 6,439,824, is also incorporated herein by reference.

Claim Sheet Marked Up To Show Changes

1. (Currently Amended) A system for processing flat media, comprising:

a work-in-progress space at a first elevation and having multiple flat media container positions arranged in a side-by-side array, and with all of the flat media container positions at the first elevation ~~for holding batches of flat media~~;

a docking station at a second elevation higher than the first elevation;

a container door remover at the docking station;

an elevator for vertically raising a container holding flat media from a flat media container position at the first elevation, to the docking station;

~~a transfer station;~~

a spray process chamber; and

a process robot movable between the ~~transfer~~ docking station and the process chamber, for moving flat media between them.

2. (Cancelled)

3. (Currently Amended) The system of claim [2] 30 with the loader having a loader conveyor for moving a container holding flat media from the loader onto the indexer.

4. (Currently Amended) The system of claim [2] 30 with the indexer comprising at least one drive section having a plurality of rollers for supporting a flat media holding container, and with a drive motor linked to at least one of the rollers.

5. (Previously Amended) The system of claim 4 where the rollers support the container only at the outside lateral edges of the container.

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Cancelled)

12. (Cancelled)

13. (Cancelled)

14. (Cancelled)

15. (Cancelled)

16. (Currently Amended) The system of claim [15] 1 further comprising at least one carrier and a transfer robot at ~~the~~ a transfer station, with the transfer robot movable to carry a flat media article from a container at the docking station to a carrier at the transfer station.

17. (Original) The system of claim 16 with the at least one carrier having spaced apart finger slots adapted to engage with an end effector on the process robot.

18. (Currently Amended) A system for processing flat media, comprising:

an indexer having first and second rows of flat media container holding positions, and at least one container shift system for moving containers between the holding positions;

a transfer station vertically above the indexer;

a docking station adjacent to the transfer station;

a container door remover associated with the docking station;

a spray process chamber;

a process robot movable between the transfer station and the process chamber, for moving flat media between them; and

at least one docking station elevator for moving a container vertically from the indexer to the docking station.

19. (Original) The system of claim 18 further comprising an engager plate positioned on an engager actuator supported on the docking station elevator.

20. (Cancelled)

21. (Cancelled)

22. (Currently Amended) A system for processing flat media, comprising:

an indexer having a first row and second row parallel to the first row, with each of the first and second rows having a plurality of container holding positions, and at least one shuttle ~~device~~ robot for moving a container from the first row to the second row;

a docking wall having at least one opening, for docking a container;

at least one elevator associated with the indexer, for moving a container vertically between the indexer and the docking wall;

a transfer robot positioned vertically above the indexer and adjacent to the docking wall, with the transfer robot moveable to carry a flat media article from a container at the docking wall to a carrier;

at least one spray process chamber;

a process robot having an end effector for engaging and lifting the carrier and for moving the carrier to the process chamber .

23. (Currently Amended) A system for processing flat media, comprising:

means for holding a container at a first elevation;

a docking station for docking the container at a second elevation higher than the first elevation;

door removal means for removing a door of the container;

means for raising the ~~pod~~ container from the first elevation to the docking station;

a transfer station adjacent to the docking station;

transfer means at the transfer station for moving flat media out of the container and into a carrier;

~~means for carrying flat media from the container at the docking station to the transfer station;~~

process chamber means for processing the flat media by spinning the carrier and by spraying a process liquid onto the flat media in the carrier; and

robot means for moving the carrier from the transfer station and for placing the carrier into the process chamber means.

~~means for spin/spray processing the flat media; and~~

~~means for moving the flat media between the transfer station and the means for processing the flat media.~~

24. (Cancelled)

25. (Cancelled)

26. (Currently Amended) The system of claim [25] 36 wherein the wrist joint is laterally offset from the forearm for holding articles to one side of the forearm, with the process robot moveable into an overhand position wherein the wrist joint is above

the elbow joint, and moveable into an underhand position wherein the wrist joint is below the elbow joint.

27. (Currently Amended) The system of claim [25] 36 wherein the end effector is displaced to one side of the wrist joint and the elbow joint, so that neither the wrist joint or the elbow joint is positionable vertically above the end effector, regardless of the orientation of the process robot.

28. (Cancelled)

29. (Cancelled)

30. (New) A system for processing flat media, comprising:

a work-in-progress space at a first elevation and having multiple positions for holding batches of flat media;

an indexer in the work-in-progress space and a loader associated with the indexer, the loader having a load elevator for moving a closed container holding flat media between an up position, and a down position, and with the load elevator in the down position substantially aligned with the indexer at the first elevation;

a docking station at a second elevation higher than the first elevation;

an elevator for vertically raising a container holding flat media from the first elevation to the docking station;

a spray process chamber; and

a process robot for moving flat media to and from the spray process chamber.

31. (New) A system for processing flat media, comprising:

a work-in-progress space at a first elevation and having multiple positions for holding batches of flat media;

an indexer in the work-in-progress space, with the indexer having a first row and second row parallel to the first row, and at least one shuttle device for moving a container from the first row to the second row;

a docking station at a second elevation higher than the first elevation;

an elevator for vertically lifting a container holding flat media from the first elevation to the docking station;

a spray process chamber; and

a process robot movable to load and unload flat media into and out of the spray process chamber.

32. (New) A system for processing flat media, comprising:

a work-in-progress space at a first elevation and having multiple positions for holding batches of flat media;

a docking station at a second elevation higher than the first elevation;

an elevator for vertically moving a container holding flat media from the first elevation to the docking station;

a transfer station;

at least one transfer robot at the transfer station;

at least one carrier positionable at the transfer station, with the transfer robot movable to carry a flat media article from a container at the docking station to the carrier at the transfer station;

a spray process chamber; and

a process robot movable between the transfer station and the process chamber, for moving flat media between them.

33. (New) The system of claim 32 further comprising a rotor in the spray process chamber adapted to receive the carrier and a batch or workpieces held in the carrier.

34. (New) A system for processing flat media, comprising:

an indexer;

a transfer station above the indexer;

a docking station adjacent to the transfer station;

a container door remover associated with the docking station;

a spray process chamber;

a process robot movable between the transfer station and the process chamber, for moving flat media between them; and

at least one docking station elevator for moving a container vertically from the indexer to the docking station;

an engager plate positioned on an engager actuator supported on the docking station elevator; and

a docking wall at the docking station with the docking wall having at least one opening, and with the engager plate moveable towards and away from the docking wall, to dock and un-dock a container at the docking station.

35. (New) A system for processing flat media, comprising:

an indexer;

a transfer station above the indexer;

a generally horizontal deck separating the indexer from the transfer station;

a docking station adjacent to the transfer station;

a container door remover associated with the docking station;

a spray process chamber;

a process robot movable between the transfer station and the process chamber, for moving flat media between them; and

at least one docking station elevator for moving a container vertically from the indexer to the docking station.

36. (New) A system for processing flat media, comprising:

a work-in-progress space having multiple positions for holding batches of flat media;

a docking station;

a container door remover associated with the docking station;

an elevator for moving a container holding flat media from the work-in-progress space to the docking station;

a spray process chamber;

a process robot movable to the process chamber and to a position adjacent to the docking station, with the process robot including:

a lift unit;

a vertical lift rail on the lift unit;

an elbow joint on the lift unit, with the elbow joint moveable along the lift rail via a lift motor;

a forearm attached to the lift unit at the elbow joint;

a wrist joint attached to the forearm; and

an end effector attached to the forearm at the wrist joint.

37. (New) A system for processing flat media, comprising:

an enclosure:

a work-in-progress space within the enclosure, and having multiple positions for holding batches of flat media;

a docking station within the enclosure;

a container door remover associated with the docking station;

an elevator for moving a container holding flat media from the work-in-progress space to the docking station;

a spray process chamber;

a process robot movable within the enclosure from adjacent the docking station to the process chamber; and

a container rotator for rotating the container, before the container is docked at the docking station.

38. (New) The system of claim 18 wherein the container shift system comprises a plurality of rollers, with at least one of the rollers linked to a drive motor.